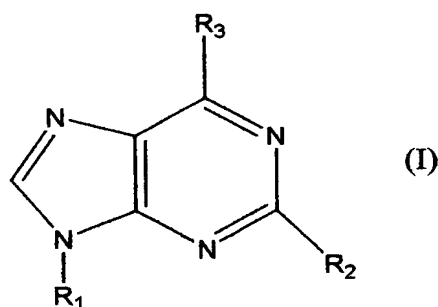
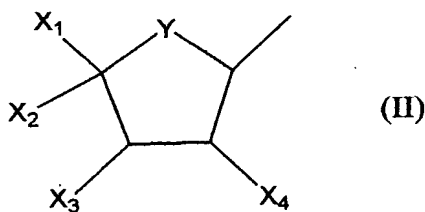


CLAIMS:

1. A method for inducing G-CSF secretion within the body of a subject, comprising administering to the subject an effective amount of an active ingredient selected from the group consisting of an adenosine A3 receptor agonist (A3RAg), an
5 A1 adenosine receptor agonist (A1RAg) and a combination of an A3RAg and an A1RAg.
2. A method according to Claim 1, wherein said active ingredient is A3RAg.
3. A method according to Claim 2, wherein the drug is administered orally.
4. method according to Claim 1, wherein said active ingredient is a nucleotide
10 derivative of the following general formula (I):



wherein R₁ is C₁-C₁₀ alkyl, C₁-C₁₀ hydroxyalkyl, C₁-C₁₀ carboxyalkyl or C₁-C₁₀ cyanoalkyl or a group of the following general formula (II):



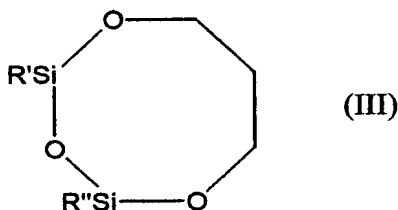
15 in which:

- Y is oxygen, sulfur or carbon atoms;
- X₁ is H, C₁-C₁₀ alkyl, R^aR^bNC(=O)- or HOR^c-, wherein R^a and R^b may be the same or different and are selected from the group consisting of hydrogen, C₁-C₁₀ alkyl, amino, C₁-C₁₀ haloalkyl, C₁-C₁₀ aminoalkyl, C₁-C₁₀

BOC-aminoalkyl, and C₃-C₁₀ cycloalkyl or are joined together to form a heterocyclic ring containing two to five carbon atoms, and R^c is selected from the group consisting of C₁-C₁₀ alkyl, amino, C₁-C₁₀ haloalkyl, C₁-C₁₀ aminoalkyl, C₁-C₁₀ BOC-aminoalkyl, and C₃-C₁₀ cycloalkyl;

5 - X₂ is H, hydroxyl, C₁-C₁₀ alkylamino, C₁-C₁₀ alkylamido or C₁-C₁₀ hydroxyalkyl;

- X₃ and X₄ each independently are hydrogen, hydroxyl, amino, amido, azido, halo, alkyl, alkoxy, carboxy, nitrilo, nitro, trifluoro, aryl, alkaryl, thio, thioester, thioether, -OCOPh, -OC(=S)OPh or both X₃ and X₄ are oxygen
10 connected to >C=S to form a 5-membered ring, or X₂ and X₃ form the ring of formula (III):



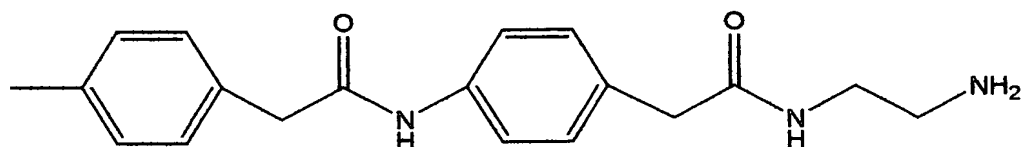
where R' and R'' are independently C₁-C₁₀ alkyl;

- R₂ is selected from the group consisting of hydrogen,
15 halo, C₁-C₁₀ alkylether, amino, hydrazido, C₁-C₁₀ alkylamino, C₁-C₁₀ alkoxy, C₁-C₁₀ thioalkoxy, pyridylthio, C₂-C₁₀ alkenyl; C₂-C₁₀ alkynyl, thio, and C₁-C₁₀ alkylthio; and

R₃ is a -NR₄R₅ group with R₄ being hydrogen or a group selected from alkyl, substituted alkyl or aryl-NH-C(Z)-, with Z being O, S, or NR^a with R^a having
20 the above meanings,

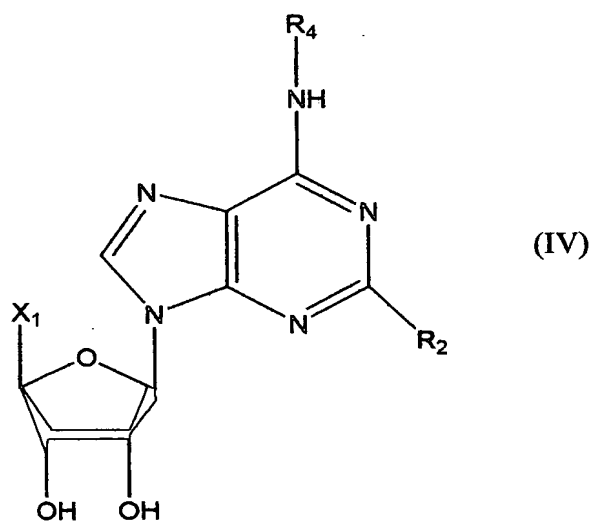
- And R₅, where R₄ is hydrogen, is selected from the group consisting of R- and S-1-phenylethyl, benzyl, phenylethyl or anilide groups unsubstituted or substituted in one or more positions with a substituent selected from the
25 group consisting of C₁-C₁₀ alkyl, amino, halo, C₁-C₁₀ haloalkyl, nitro, hydroxyl, acetoamido, C₁-C₁₀ alkoxy, and sulfonic acid or a salt thereof; or R₄ is benzodioxanemethyl, fururyl, L-propylalanyl- aminobenzyl, β-

alanylamino- benzyl, T-BOC- β -alanylaminobenzyl, phenylamino, carbamoyl, phenoxy or C₁-C₁₀ cycloalkyl; or R₅ is a group of the following formula:



- 5 - or a suitable salt of the compound defined above, e.g. a triethylammonium salt thereof; or
- when R₄ is, a group selected from alkyl, substituted alkyl, or aryl-NH-C(Z)-, then, R₄ is selected from the group consisting of substituted or unsubstituted heteroaryl-NR^a-C(Z)-, heteroaryl-C(Z)-, alkaryl-NR^a-C(Z)-, alkaryl-C(Z)-, aryl-NR-C(Z)- and aryl-C(Z)-;
- 10 wherein Z having the above defined meanings.

5. A method according to Claim 4, wherein said active ingredient is a nucleoside derivative of the general formula (IV):



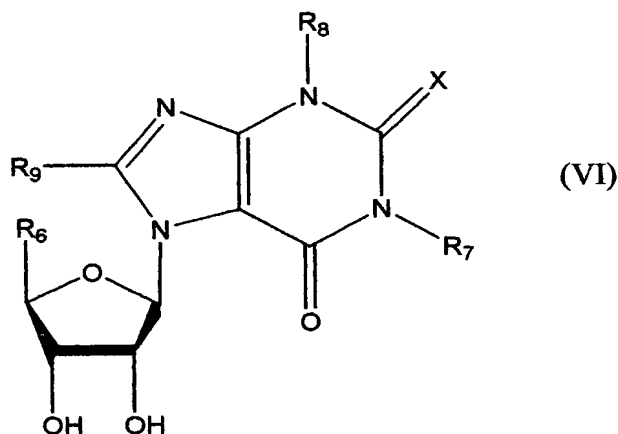
- 15 in which X₁, R₂ and R₄ are as defined in Claim 3.

6. A method according to Claim 5, wherein said active ingredient is an N6-benzyladenosine-5'-uronamide.

7. A method according to Claim 6, wherein said active ingredient is selected from the group consisting of N⁶-2-(4-aminophenyl)ethyladenosine (APNEA), N⁶-(4-amino-3-iodobenzyl) adenosine-5'-(N-methyluronamide) (AB-MECA) and 1-deoxy-1-{6- [(3-iodophenyl) methyl]amino}- 9H-purine-9-yl}-N-methyl- β-D-ribofuranuron-amide (IB-MECA) and 2-chloro-N⁶-(2-iodobenzyl)-adenosine- 5'-N-methyl-uronamide (Cl-IB-MECA).

8. A method according to Claim 1, wherein the active ingredient is N⁶-benzyladenosine-5'-alkyluronamide-N¹-oxide or N⁶-benzyladenosine-5'-N-dialyl-uronamide-N¹oxide.

10 9. A method according to Claim 1, wherein the active ingredient is a xanthine-7-riboside derivative of the following general formula (VI):



wherein:

- X is O or S;
- R₆ is R^aR^bNC(=O)- or HOR^c-, wherein
- 15 - R^a and R^b may be the same or different and are selected from the group consisting of hydrogen, C₁-C₁₀ alkyl, amino, C₁-C₁₀ haloalkyl, C₁-C₁₀ aminoalkyl, and C₃-C₁₀ cycloalkyl, or are joined together to form a heterocyclic ring containing two to five carbon atoms; and
- R^c is selected from C₁-C₁₀ alkyl, amino, C₁-C₁₀ haloalkyl, C₁-C₁₀ aminoalkyl, C₁-C₁₀ BOC-aminoalkyl and C₃-C₁₀ cycloalkyl;
- 20

- R₇ and R₈ may be the same or different and are selected from the group consisting of C₁-C₁₀ alkyl, C₁-C₁₀ cycloalkyl, R- or S-1-phenylethyl, an unsubstituted benzyl or anilide group, and a phenylether of benzyl group substituted in one or more positions with a substituent selected from the group consisting of C₁-C₁₀ alkyl, amino, halo, C₁-C₁₀ haloalkyl, nitro, hydroxyl, acetamido, C₁-C₁₀ alkoxy, and sulfonic acid;

- R₉ is selected from the group consisting of halo, benzyl, phenyl, C₃-C₁₀ cycloalkyl, and C₁-C₁₀ alkoxy;

or a salt of such a compound, for example, a triethylammonium salt thereof.

10 10. A method for therapeutic treatment, comprising administering to a subject in need an effective amount of an active ingredient for achieving a therapeutic effect, the therapeutic effect comprises induction of G-CSF production or secretion, and said active ingredient selected from the group consisting of an adenosine A3 receptor agonist (A3Rag), an A1 adenosine receptor agonist (A1Rag) and a combination of
15 an A3Rag and an A1Rag.

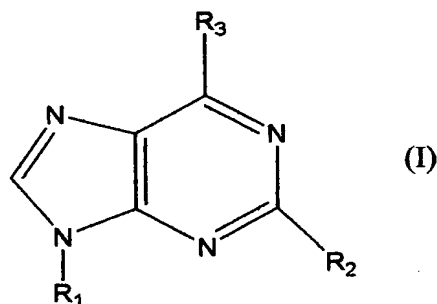
11. A method according to Claim 10, wherein said active ingredient is A3Rag.

12. A method according to Claim 11, wherein the drug is administered orally.

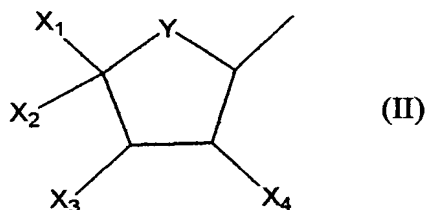
13. A method according to Claim 11, wherein said therapeutic effect is to counter drug-induced myelotoxicity.

20 14. A method according to Claim 13, wherein said drug is a chemotherapeutic drug given to the subject within the framework of anti-cancer treatment.

15. A method according to Claim 11, wherein the active ingredient is a nucleotide derivative of the following general formula (I):



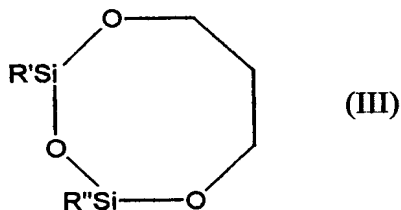
wherein R₁ is C₁-C₁₀ alkyl, C₁-C₁₀ hydroxyalkyl, C₁-C₁₀ carboxyalkyl or C₁-C₁₀ cyanoalkyl or a group of the following general formula (II):



5 in which:

- Y is oxygen, sulfur or carbon atoms;
- X₁ is H, C₁-C₁₀ alkyl, R^aR^bNC(=O)- or HOR^c-, wherein R^a and R^b may be the same or different and are selected from the group consisting of hydrogen, C₁-C₁₀ alkyl, amino, C₁-C₁₀ haloalkyl, C₁-C₁₀ aminoalkyl, C₁-C₁₀ BOC-aminoalkyl, and C₃-C₁₀ cycloalkyl or are joined together to form a heterocyclic ring containing two to five carbon atoms, and R^c is selected from the group consisting of C₁-C₁₀ alkyl, amino, C₁-C₁₀ haloalkyl, C₁-C₁₀ aminoalkyl, C₁-C₁₀ BOC-aminoalkyl, and C₃-C₁₀ cycloalkyl;
- X₂ is H, hydroxyl, C₁-C₁₀ alkylamino, C₁-C₁₀ alkylamido or C₁-C₁₀ hydroxyalkyl;
- X₃ and X₄ each independently are hydrogen, hydroxyl, amino, amido, azido, halo, alkyl, alkoxy, carboxy, nitrilo, nitro, trifluoro, aryl, alkaryl, thio, thioester, thioether, -OCOPh, -OC(=S)OPh or both X₃ and X₄ are oxygen

connected to $>C=S$ to form a 5-membered ring, or X_2 and X_3 form the ring of formula (III):

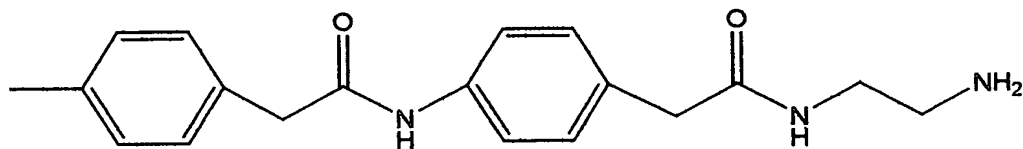


where R' and R'' are independently C_1 - C_{10} alkyl;

- R_2 is selected from the group consisting of hydrogen, halo, C_1 - C_{10} alkylether, amino, hydrazido, C_1 - C_{10} alkylamino, C_1 - C_{10} alkoxy, C_1 - C_{10} thioalkoxy, pyridylthio, C_2 - C_{10} alkenyl; C_2 - C_{10} alkynyl, thio, and C_1 - C_{10} alkylthio; and

R_3 is a $-NR_4R_5$ group with R_4 being hydrogen or a group selected from alkyl, substituted alkyl or aryl-NH-C(Z)-, with Z being O, S, or NR^a with R^a having the above meanings,

- And R_5 , where R_4 is hydrogen, is selected from the group consisting of R- and S-1-phenylethyl, benzyl, phenylethyl or anilide groups unsubstituted or substituted in one or more positions with a substituent selected from the group consisting of C_1 - C_{10} alkyl, amino, halo, C_1 - C_{10} haloalkyl, nitro, hydroxyl, acetoamido, C_1 - C_{10} alkoxy, and sulfonic acid or a salt thereof; or R_4 is benzodioxanemethyl, fururyl, L-propylalanyl- aminobenzyl, β -alanyl-amino- benzyl, T-BOC- β -alanylaminobenzyl, phenylamino, carbamoyl, phenoxy or C_1 - C_{10} cycloalkyl; or R_5 is a group of the following formula:

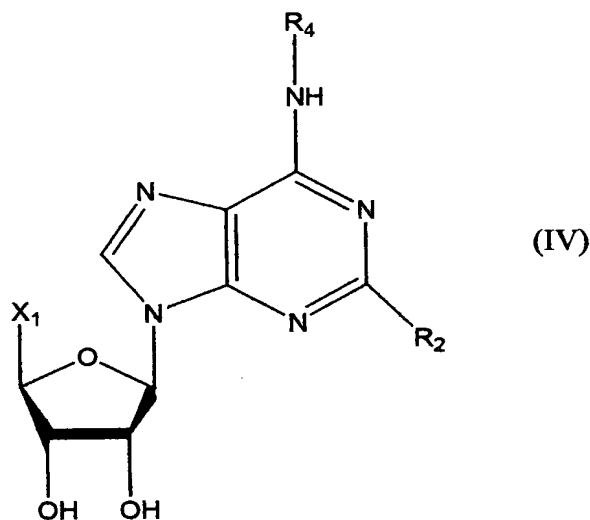


- or a suitable salt of the compound defined above; or

when R_4 is, a group selected from alkyl, substituted alkyl, or aryl-NH-C(Z)-, then, R_4 is selected from the group consisting of substituted or unsubstituted heteroaryl-NR^a-C(Z)-, heteroaryl-C(Z)-, alkaryl-NR^a-C(Z)-, alkaryl-C(Z)-, aryl-NR-C(Z)- and aryl-C(Z)-;

5 wherein Z having the above defined meanings.

16. A method according to Claim 15, wherein said active ingredient is a nucleoside derivative of the general formula (IV):



10 in which X_1 , R_2 and R_4 are as defined in Claim 15.

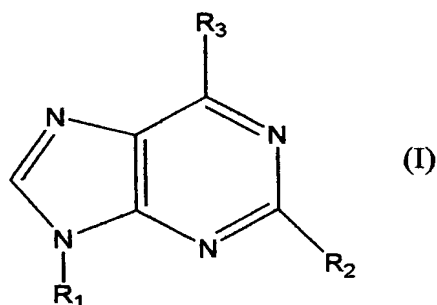
17. A method according to Claim 16, wherein said active ingredient is an N⁶-benzyladenosine-5'-uronamide.

18. A method according to Claim 17, wherein said active ingredient is selected from the group consisting of N⁶-2-(4-aminophenyl)ethyladenosine (APNEA), N⁶-(4-amino-3-iodobenzyl) adenosine-5'-(N-methyluronamide) (AB-MECA) and 1-deoxy-
15 1-{6- [(3-iodophenyl) methyl]amino}- 9H-purine-9-yl}-N-methyl- β -D-ribofuranuron-amide (IB-MECA) and 2-chloro-N⁶-(2-iodobenzyl)-adenosine- 5'-N-methyl-uronamide (Cl-IB-MECA).

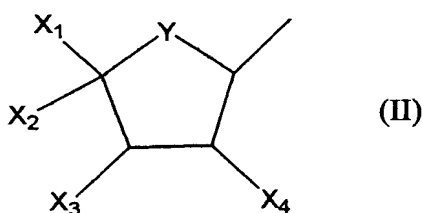
19. A method for inducing proliferation or differentiation of bone marrow or
20 white blood cells in a subject, comprising administering to the subject an effective

amount of an active ingredient selected from the group consisting of an adenosine A3 receptor agonist (A3RAg), an adenosine A2RAn and a combination of an A3RAg or an A2RAn.

20. A method according to Claim 16, wherein said active ingredient is A3RAg.
- 5 21. A method according to Claim 17, wherein the drug is administered orally.
22. A method according to Claim 19, wherein the active ingredient is a nucleotide derivative of the following general formula (I):



- wherein R₁ is C₁-C₁₀ alkyl, C₁-C₁₀ hydroxyalkyl, C₁-C₁₀ carboxyalkyl or C₁-C₁₀ cyanoalkyl or a group of the following general formula (II):
- 10



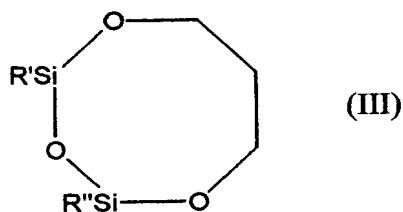
in which:

- Y is oxygen, sulfur or carbon atoms;
 - X₁ is H, C₁-C₁₀ alkyl, R^aR^bNC(=O)- or HOR^c-, wherein R^a and R^b may be the same or different and are selected from the group consisting of hydrogen, C₁-C₁₀ alkyl, amino, C₁-C₁₀ haloalkyl, C₁-C₁₀ aminoalkyl, C₁-C₁₀ BOC-aminoalkyl, and C₃-C₁₀ cycloalkyl or are joined together to form a heterocyclic ring containing two to five carbon atoms, and R^c is selected from
- 15

the group consisting of C₁-C₁₀ alkyl, amino, C₁-C₁₀ haloalkyl, C₁-C₁₀ aminoalkyl, C₁-C₁₀ BOC-aminoalkyl, and C₃-C₁₀ cycloalkyl;

- X₂ is H, hydroxyl, C₁-C₁₀ alkylamino, C₁-C₁₀ alkylamido or C₁-C₁₀ hydroxyalkyl;

5 - X₃ and X₄ each independently are hydrogen, hydroxyl, amino, amido, azido, halo, alkyl, alkoxy, carboxy, nitrilo, nitro, trifluoro, aryl, alkaryl, thio, thioester, thioether, -OCOPh, -OC(=S)OPh or both X₃ and X₄ are oxygen connected to >C=S to form a 5-membered ring, or X₂ and X₃ form the ring of formula (III):



10 where R' and R'' are independently C₁-C₁₀ alkyl;

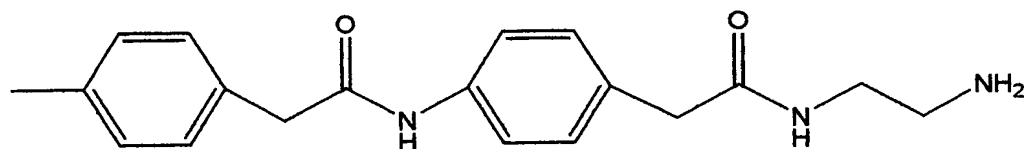
- R₂ is selected from the group consisting of hydrogen, halo, C₁-C₁₀ alkylether, amino, hydrazido, C₁-C₁₀ alkylamino, C₁-C₁₀ alkoxy, C₁-C₁₀ thioalkoxy, pyridylthio, C₂-C₁₀ alkenyl; C₂-C₁₀ alkynyl, thio, and C₁-C₁₀ alkylthio; and

15 R₃ is a -NR₄R₅ group with R₄ being hydrogen or a group selected from alkyl, substituted alkyl or aryl-NH-C(Z)-, with Z being O, S, or NR^a with R^a having the above meanings,

- And R₅, where R₄ is hydrogen, is selected from the group consisting of R- and S-1-phenylethyl, benzyl, phenylethyl or anilide groups unsubstituted or substituted in one or more positions with a substituent selected from the group consisting of C₁-C₁₀ alkyl, amino, halo, C₁-C₁₀ haloalkyl, nitro, hydroxyl, acetoamido, C₁-C₁₀ alkoxy, and sulfonic acid or a salt thereof; or R₄ is benzodioxanemethyl, fururyl, L-propylalanyl- aminobenzyl, β-alanyl-amino- benzyl, T-BOC-β-alanylaminobenzyl, phenylamino, carbamoyl, phenoxy or C₁-C₁₀ cycloalkyl; or R₅ is a group of the following formula:

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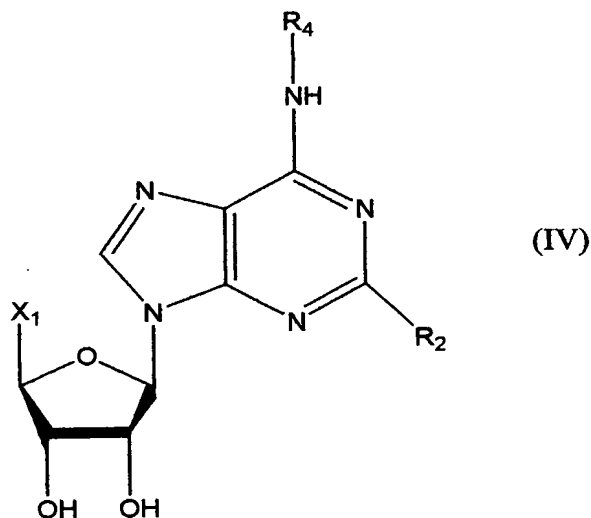


- or a suitable salt of the compound defined above; or

when R_4 is, a group selected from alkyl, substituted alkyl, or aryl-NH-C(Z)-, then, R_4 is selected from the group consisting of substituted or unsubstituted heteroaryl-NR^a-C(Z)-, heteroaryl-C(Z)-, alkaryl-NR^a-C(Z)-, alkaryl-C(Z)-, aryl-NR-C(Z)- and aryl-C(Z)-;

wherein Z having the above defined meanings.

23. A method according to Claim 19, wherein said active ingredient is a nucleoside derivative of the general formula (IV):



in which X_1 , R_1 , and R_4 are as defined in Claim 19.

24. A method according to Claim 23, wherein said active ingredient is an N6-benzyladenosine-5'-uronamide.

25. A method according to Claim 24, wherein said active ingredient is selected from the group consisting of N⁶-2-(4-aminophenyl)ethyladenosine (APNEA), N⁶-(4-

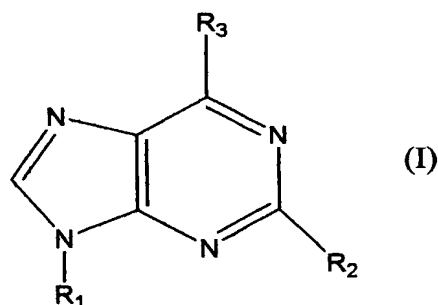
amino-3- iodobenzyl) adenosine-5'-(N-methyluronamide) (AB-MECA) and 1-deoxy-1-{6- [(3-iodophenyl) methyl]amino}- 9H-purine-9-yl}-N-methyl- β -D-ribofuranuron-amide (IB-MECA) and 2-chloro-N⁶-(2-iodobenzyl)-adenosine- 5'-N-methyl-uronamide (Cl-IB-MECA).

- 5 26. A method for prevention or treatment of leukopenia, comprising administering to a subject in need an effective amount of an active ingredient selected from the group consisting of an adenosine A3 receptor agonist (A3RAg), an A2RAn and a combination of an A3RAg or an A2RAn.

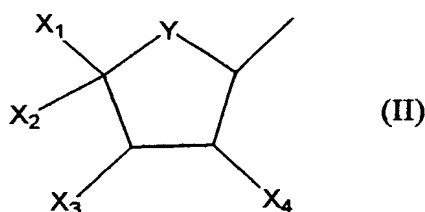
27. A method according to Claim 20, for prevention or treatment of drug- induced
10 leukopenia.

28. A method according to Claim 26, wherein said active ingredient is an A3RAg.

29. A method according to Claim 28, wherein the active ingredient is a nucleotide derivative of the following general formula (I):



- 15 wherein R₁ is C₁-C₁₀ alkyl, C₁-C₁₀ hydroxyalkyl, C₁-C₁₀ carboxyalkyl or C₁-C₁₀ cyanoalkyl or a group of the following general formula (II):



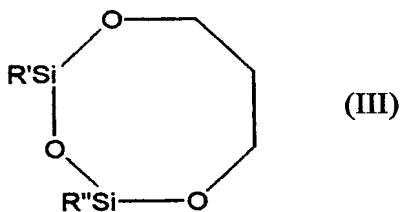
in which:

- Y is oxygen, sulfur or carbon atoms;

- X_1 is H, C_1 - C_{10} alkyl, $R^a R^b NC(=O)-$ or HOR^c- , wherein R^a and R^b may be the same or different and are selected from the group consisting of hydrogen, C_1 - C_{10} alkyl, amino, C_1 - C_{10} haloalkyl, C_1 - C_{10} aminoalkyl, C_1 - C_{10} BOC-aminoalkyl, and C_3 - C_{10} cycloalkyl or are joined together to form a heterocyclic ring containing two to five carbon atoms, and R^c is selected from the group consisting of C_1 - C_{10} alkyl, amino, C_1 - C_{10} haloalkyl, C_1 - C_{10} aminoalkyl, C_1 - C_{10} BOC-aminoalkyl, and C_3 - C_{10} cycloalkyl;

- X_2 is H, hydroxyl, C_1 - C_{10} alkylamino, C_1 - C_{10} alkylamido or C_1 - C_{10} hydroxyalkyl;

- X_3 and X_4 each independently are hydrogen, hydroxyl, amino, amido, azido, halo, alkyl, alkoxy, carboxy, nitrilo, nitro, trifluoro, aryl, alkaryl, thio, thioester, thioether, $-OCOPh$, $-OC(=S)OPh$ or both X_3 and X_4 are oxygen connected to $>C=S$ to form a 5-membered ring, or X_2 and X_3 form the ring of formula (III):



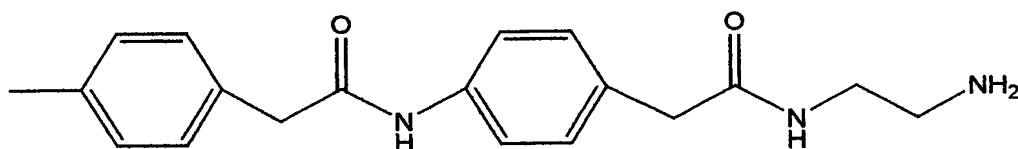
where R' and R'' are independently C_1 - C_{10} alkyl;

- R_2 is selected from the group consisting of hydrogen, halo, C_1 - C_{10} alkylether, amino, hydrazido, C_1 - C_{10} alkylamino, C_1 - C_{10} alkoxy, C_1 - C_{10} thioalkoxy, pyridylthio, C_2 - C_{10} alkenyl; C_2 - C_{10} alkynyl, thio, and C_1 - C_{10} alkylthio; and

R_3 is a $-NR_4R_5$ group with R_4 being hydrogen or a group selected from alkyl, substituted alkyl or aryl-NH-C(Z)-, with Z being O, S, or NR^a with R^a having the above meanings,

- And R_5 , where R_4 is hydrogen, is selected from the group consisting of R- and S-1-phenylethyl, benzyl, phenylethyl or anilide groups unsubstituted or substituted in one or more positions with a substituent selected from the

group consisting of C₁-C₁₀ alkyl, amino, halo, C₁-C₁₀ haloalkyl, nitro, hydroxyl, acetoamido, C₁-C₁₀ alkoxy, and sulfonic acid or a salt thereof; or R₄ is benzodioxanemethyl, fururyl, L-propylalanyl- aminobenzyl, β-alanyl-amino- benzyl, T-BOC-β-alanylaminobenzyl, phenylamino, carbamoyl, phenoxy or C₁-C₁₀ cycloalkyl; or R₅ is a group of the following formula:

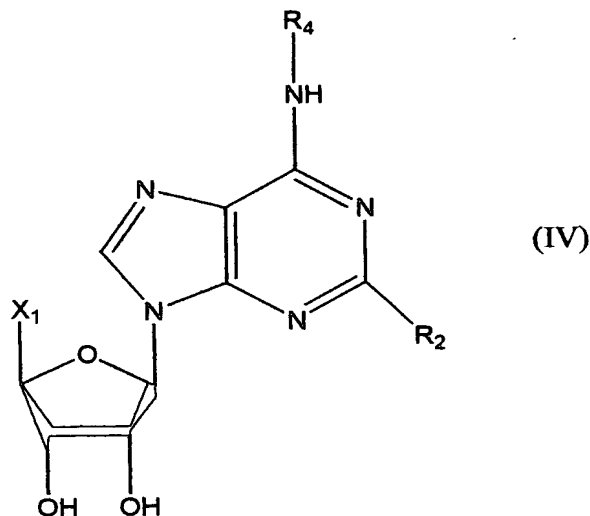


- or a suitable salt of the compound defined above, e.g. a triethylammonium salt thereof; or

when R₄ is, a group selected from alkyl, substituted alkyl, or aryl-NH-C(Z)-, then, R₄ is selected from the group consisting of substituted or unsubstituted heteroaryl-NR^a-C(Z)-, heteroaryl-C(Z)-, alkaryl-NR^a-C(Z)-, alkaryl-C(Z)-, aryl-NR-C(Z)- and aryl-C(Z)-;

wherein Z having the above defined meanings.

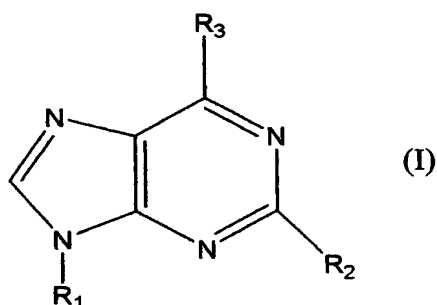
30. A method according to Claim 29, wherein said active ingredient is a nucleoside derivative of the general formula (IV):



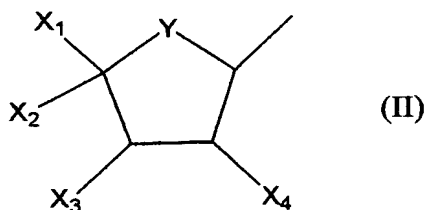
in which X_1 , R_2 and R_4 are as defined in Claim 28.

31. A method according to Claim 30, wherein said active ingredient is an N⁶-benzyladenosine-5'-uronamide.
- 5 32. A method according to Claim 31, wherein said active ingredient is selected from the group consisting of N⁶-2-(4-aminophenyl)ethyladenosine (APNEA), N⁶-(4-amino-3-iodobenzyl) adenosine-5'-(N-methyluronamide) (AB-MECA) and 1-deoxy-1-{6- [(3-iodophenyl) methyl]amino}- 9H-purine-9-yl}-N-methyl- β -D-ribofuranuron-amide (IB-MECA) and 2-chloro-N⁶-(2-iodobenzyl)-adenosine- 5'-N-methyl-uronamide (Cl-IB-MECA).
- 10 33. A method for prevention or treatment of toxic side effects of a drug, comprising administering to a subject in need an effective amount of an active ingredient selected from the group consisting of an adenosine A3 receptor agonist (A3Rag), an adenosine A2 receptor antagonists (A2Ran) and a combination of an
- 15 A3Rag and an A2Ran.
34. A method according to Claim 33, wherein the toxic side effect is manifested by weight loss.
35. A method according to Claim 33, wherein said drug is a chemotherapeutic drug.
- 20 36. A method according to Claim 33, wherein said active ingredient is A3Rag.

37. A method according to Claim 36, wherein said active ingredient is a nucleotide derivative of the following general formula (I):



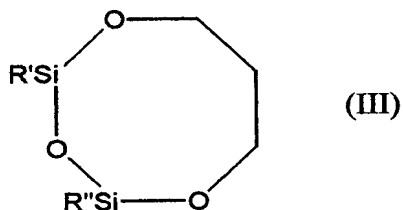
wherein R₁ is C₁-C₁₀ alkyl, C₁-C₁₀ hydroxyalkyl, C₁-C₁₀ carboxyalkyl or C₁-C₁₀ cyanoalkyl or a group of the following general formula (II):



in which:

- Y is oxygen, sulfur or carbon atoms;
- X₁ is H, C₁-C₁₀ alkyl, R^aR^bNC(=O)- or HOR^c-, wherein R^a and R^b may be the same or different and are selected from the group consisting of hydrogen, C₁-C₁₀ alkyl, amino, C₁-C₁₀ haloalkyl, C₁-C₁₀ aminoalkyl, C₁-C₁₀ BOC-aminoalkyl, and C₃-C₁₀ cycloalkyl or are joined together to form a heterocyclic ring containing two to five carbon atoms, and R^c is selected from the group consisting of C₁-C₁₀ alkyl, amino, C₁-C₁₀ haloalkyl, C₁-C₁₀ aminoalkyl, C₁-C₁₀ BOC-aminoalkyl, and C₃-C₁₀ cycloalkyl;
- X₂ is H, hydroxyl, C₁-C₁₀ alkylamino, C₁-C₁₀ alkylamido or C₁-C₁₀ hydroxyalkyl;
- X₃ and X₄ each independently are hydrogen, hydroxyl, amino, amido, azido, halo, alkyl, alkoxy, carboxy, nitrilo, nitro, trifluoro, aryl, alkaryl, thio,

thioester, thioether, -OCOPh, -OC(=S)OPh or both X₃ and X₄ are oxygen connected to >C=S to form a 5-membered ring, or X₂ and X₃ form the ring of formula (III):

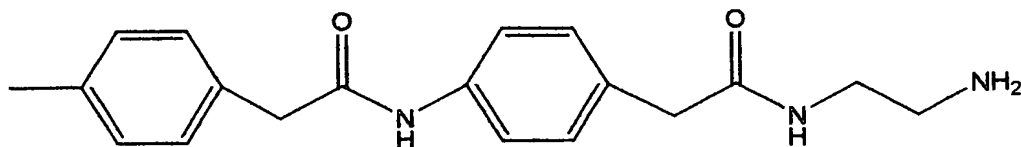


5 where R' and R'' are independently C₁-C₁₀ alkyl;

- R₂ is selected from the group consisting of hydrogen, halo, C₁-C₁₀ alkylether, amino, hydrazido, C₁-C₁₀ alkylamino, C₁-C₁₀ alkoxy, C₁-C₁₀ thioalkoxy, pyridylthio, C₂-C₁₀ alkenyl; C₂-C₁₀ alkynyl, thio, and C₁-C₁₀ alkylthio; and

10 R₃ is a -NR₄R₅ group with R₄ being hydrogen or a group selected from alkyl, substituted alkyl or aryl-NH-C(Z)-, with Z being O, S, or NR^a with R^a having the above meanings,

- And R₅, where R₄ is hydrogen, is selected from the group consisting of R- and S-1-phenylethyl, benzyl, phenylethyl or anilide groups unsubstituted or substituted in one or more positions with a substituent selected from the
15 group consisting of C₁-C₁₀ alkyl, amino, halo, C₁-C₁₀ haloalkyl, nitro, hydroxyl, acetoamido, C₁-C₁₀ alkoxy, and sulfonic acid or a salt thereof; or R₄ is benzodioxanemethyl, fururyl, L-propylalanyl- aminobenzyl, β-alanyl-amino- benzyl, T-BOC-β-alanylaminobenzyl, phenylamino, carbamoyl,
20 phenoxy or C₁-C₁₀ cycloalkyl; or R₅ is a group of the following formula:

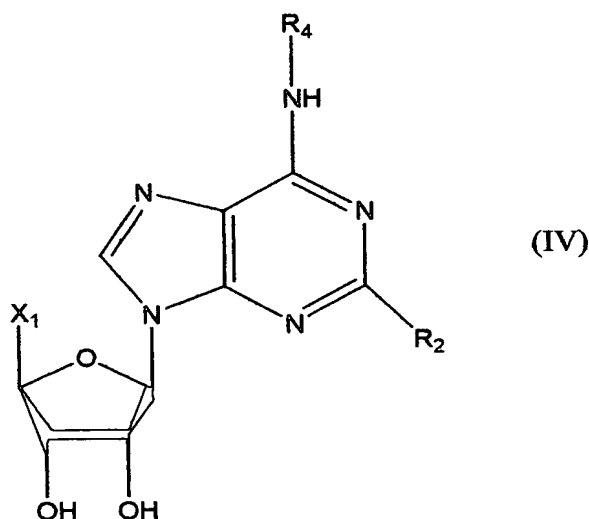


- or a suitable salt of the compound defined above, e.g. a triethylammonium salt thereof; or

when R_4 is, a group selected from alkyl, substituted alkyl, or aryl-NH-C(Z)-, then, R_4 is selected from the group consisting of substituted or unsubstituted heteroaryl-NR^a-C(Z)-, heteroaryl-C(Z)-, alkaryl-NR^a-C(Z)-, alkaryl-C(Z)-, aryl-NR-C(Z)- and aryl-C(Z)-;

wherein Z having the above defined meanings.

38. A method according to Claim 37, wherein said active ingredient is a nucleoside derivative of the general formula (IV):

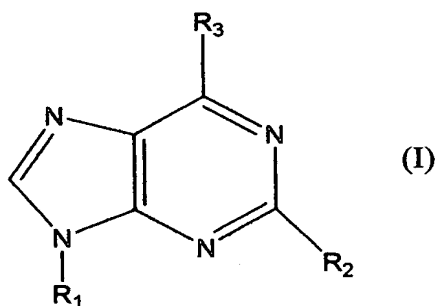


in which X_1 , R_2 and R_4 are as defined in Claim 37.

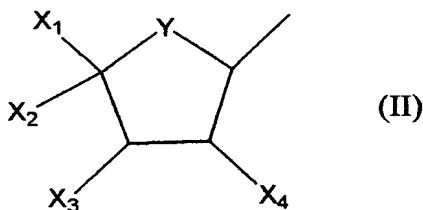
39. A method according to Claim 38, wherein said active ingredient is an N6-benzyladenosine-5'-uronamide.

40. A method according to Claim 39, wherein said active ingredient is selected from the group consisting of N⁶-2-(4-aminophenyl)ethyladenosine (APNEA), N⁶-(4-amino-3-iodobenzyl) adenosine-5'-(N-methyluronamide) (AB-MECA) and 1-deoxy-1-{6- [({3-iodophenyl} methyl)amino]- 9H-purine-9-yl}-N-methyl- β -D-ribofuranuron-amide (IB-MECA) and 2-chloro-N⁶-(2-iodobenzyl)-adenosine- 5'-N-methyl-uronamide (CI-IB-MECA).

41. A method for inhibiting abnormal cell growth in a subject, comprising administering to the subject a therapeutically effective amount of an active ingredient selected from the group consisting of an adenosine A3 receptor agonist (A3RAg), an adenosine A2 receptor agonist (A2RAg) and a combination of A3RAg and A2RAg.
- 5 42. A method according to ~~Claim 41~~, for inhibiting growth or proliferation of tumor cells.
43. A method according to ~~Claim 41~~, wherein the active ingredient is an A3RAg.
44. A method according to ~~Claim 43~~, wherein the drug is administered orally.
45. A method according to ~~Claim 41~~, wherein the drug is administered in
10 combination with a chemotherapeutic drug.
46. A method according to ~~Claim 41~~, wherein the active ingredient is a nucleotide derivative of the following general formula (I):



- wherein R₁ is C₁-C₁₀ alkyl, C₁-C₁₀ hydroxyalkyl, C₁-C₁₀ carboxyalkyl or C₁-C₁₀
15 cyanoalkyl or a group of the following general formula (II):



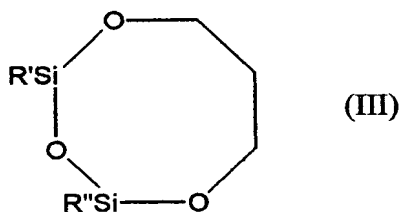
in which:

- Y is oxygen, sulfur or carbon atoms;

- X_1 is H, C_1 - C_{10} alkyl, $R^a R^b NC(=O)-$ or HOR^c- , wherein R^a and R^b may be the same or different and are selected from the group consisting of hydrogen, C_1 - C_{10} alkyl, amino, C_1 - C_{10} haloalkyl, C_1 - C_{10} aminoalkyl, C_1 - C_{10} BOC-aminoalkyl, and C_3 - C_{10} cycloalkyl or are joined together to form a heterocyclic ring containing two to five carbon atoms, and R^c is selected from the group consisting of C_1 - C_{10} alkyl, amino, C_1 - C_{10} haloalkyl, C_1 - C_{10} aminoalkyl, C_1 - C_{10} BOC-aminoalkyl, and C_3 - C_{10} cycloalkyl;

- X_2 is H, hydroxyl, C_1 - C_{10} alkylamino, C_1 - C_{10} alkylamido or C_1 - C_{10} hydroxyalkyl;

- X_3 and X_4 each independently are hydrogen, hydroxyl, amino, amido, azido, halo, alkyl, alkoxy, carboxy, nitrilo, nitro, trifluoro, aryl, alkaryl, thio, thioester, thioether, $-OCOPh$, $-OC(=S)OPh$ or both X_3 and X_4 are oxygen connected to $>C=S$ to form a 5-membered ring, or X_2 and X_3 form the ring of formula (III):



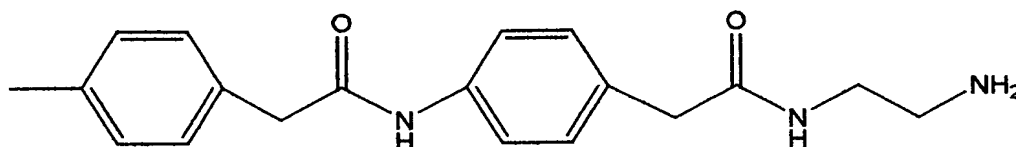
where R' and R'' are independently C_1 - C_{10} alkyl;

- R_2 is selected from the group consisting of hydrogen, halo, C_1 - C_{10} alkylether, amino, hydrazido, C_1 - C_{10} alkylamino, C_1 - C_{10} alkoxy, C_1 - C_{10} thioalkoxy, pyridylthio, C_2 - C_{10} alkenyl; C_2 - C_{10} alkynyl, thio, and C_1 - C_{10} alkylthio; and

R_3 is a $-NR_4R_5$ group with R_4 being hydrogen or a group selected from alkyl, substituted alkyl or aryl-NH-C(Z)-, with Z being O, S, or NR^a with R^a having the above meanings,

- And R_5 , where R_4 is hydrogen, is selected from the group consisting of R- and S-1-phenylethyl, benzyl, phenylethyl or anilide groups unsubstituted or substituted in one or more positions with a substituent selected from the

group consisting of C₁-C₁₀ alkyl, amino, halo, C₁-C₁₀ haloalkyl, nitro, hydroxyl, acetoamido, C₁-C₁₀ alkoxy, and sulfonic acid or a salt thereof; or R₄ is benzodioxanemethyl, fururyl, L-propylalanyl- aminobenzyl, β-alanyl-amino- benzyl, T-BOC-β-alanylaminobenzyl, phenylamino, carbamoyl, phenoxy or C₁-C₁₀ cycloalkyl; or R₅ is a group of the following formula:

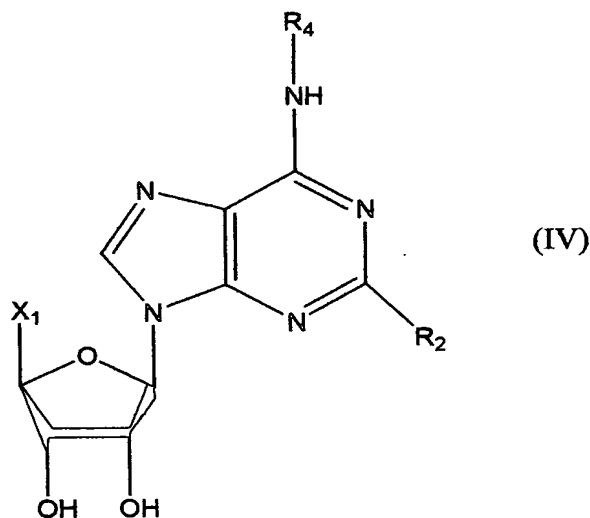


- or a suitable salt of the compound defined above, e.g. a triethylammonium salt thereof; or

when R₄ is, a group selected from alkyl, substituted alkyl, or aryl-NH-C(Z)-, then, R₄ is selected from the group consisting of substituted or unsubstituted heteroaryl-NR^a-C(Z)-, heteroaryl-C(Z)-, alkaryl-NR^a-C(Z)-, alkaryl-C(Z)-, aryl-NR-C(Z)- and aryl-C(Z)-;

wherein Z having the above defined meanings.

47. A method according to Claim 46, wherein said active ingredient is a nucleoside derivative of the general formula (IV):



in which X₁, R₂ and R₄ are as defined in Claim 15.

48. A method according to Claim 47, wherein said active ingredient is an N⁶-benzyladenosine-5'-uronamide.

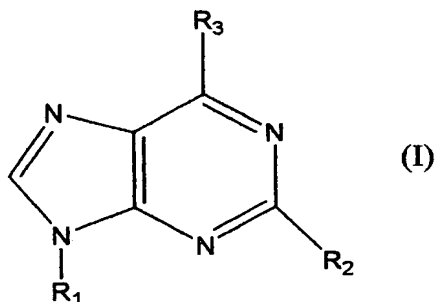
5 49. A method according to Claim 48, wherein said active ingredient is selected from the group consisting of N⁶-2-(4-aminophenyl)ethyladenosine (APNEA), N⁶-(4-amino-3-iodobenzyl) adenosine-5'-(N-methyluronamide) (AB-MECA) and 1-deoxy-1-{6- [(3-iodophenyl) methyl]amino}- 9H-purine-9-yl}-N-methyl- β-D-ribofuranuron-amide (IB-MECA) and 2-chloro-N⁶-(2-iodobenzyl)-adenosine- 5'-N-
10 methyl-uronamide (Cl-IB-MECA).

50. A method for treating cancer in a subject, comprising administering to the subject an effective amount of an adenosine A₃ receptor agonist (A₃Rag), the administration of the A₃Rag yielding a dual effect in both inhibiting proliferation of cancer cells and countering toxic side effects of chemotherapeutic drug treatment of
15 the same subject.

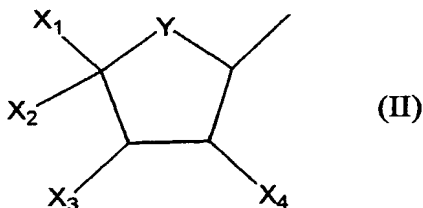
51. A method according to Claim 50, wherein the A₃Rag synergizes with said drug to yield a stronger anti-tumor effect.

52. A method according to Claim 50, wherein the drug is administered orally.

53. A method according to Claim 50, wherein the active ingredient is a nucleotide
20 derivative of the following general formula (I):



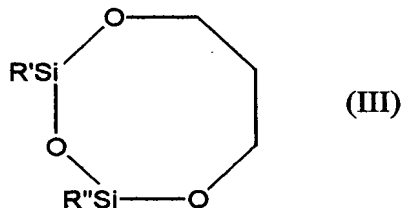
wherein R_1 is C_1 - C_{10} alkyl, C_1 - C_{10} hydroxyalkyl, C_1 - C_{10} carboxyalkyl or C_1 - C_{10} cyanoalkyl or a group of the following general formula (II):



5 in which:

- Y is oxygen, sulfur or carbon atoms;
- X_1 is H, C_1 - C_{10} alkyl, $R^a R^b NC(=O)-$ or HOR^c , wherein R^a and R^b may be the same or different and are selected from the group consisting of hydrogen, C_1 - C_{10} alkyl, amino, C_1 - C_{10} haloalkyl, C_1 - C_{10} aminoalkyl, C_1 - C_{10} BOC-aminoalkyl, and C_3 - C_{10} cycloalkyl or are joined together to form a heterocyclic ring containing two to five carbon atoms, and R^c is selected from the group consisting of C_1 - C_{10} alkyl, amino, C_1 - C_{10} haloalkyl, C_1 - C_{10} aminoalkyl, C_1 - C_{10} BOC-aminoalkyl, and C_3 - C_{10} cycloalkyl;
- X_2 is H, hydroxyl, C_1 - C_{10} alkylamino, C_1 - C_{10} alkylamido or C_1 - C_{10} hydroxyalkyl;
- X_3 and X_4 each independently are hydrogen, hydroxyl, amino, amido, azido, halo, alkyl, alkoxy, carboxy, nitrilo, nitro, trifluoro, aryl, alkaryl, thio, thioester, thioether, $-OCOPh$, $-OC(=S)OPh$ or both X_3 and X_4 are oxygen connected to $>C=S$

to form a 5-membered ring, or X_2 and X_3 form the ring of formula (III):



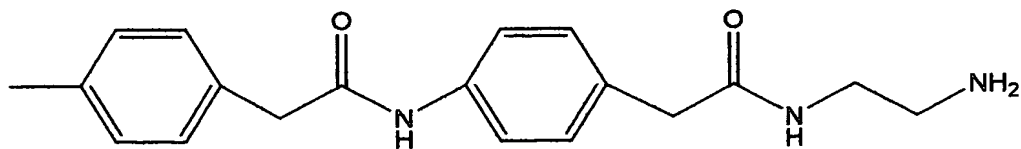
where R' and R'' are independently C_1 - C_{10} alkyl;

5 - R_2 is selected from the group consisting of hydrogen, halo, C_1 - C_{10} alkylether, amino, hydrazido, C_1 - C_{10} alkylamino, C_1 - C_{10} alkoxy, C_1 - C_{10} thioalkoxy, pyridylthio, C_2 - C_{10} alkenyl; C_2 - C_{10} alkynyl, thio, and C_1 - C_{10} alkylthio; and

10 R_3 is a $-NR_4R_5$ group with R_4 being hydrogen or a group selected from alkyl, substituted alkyl or aryl-NH-C(Z)-, with Z being O, S, or NR^a with R^a having the above meanings,

15 - And R_5 , where R_4 is hydrogen, is selected from the group consisting of R- and S-1-phenylethyl, benzyl, phenylethyl or anilide groups unsubstituted or substituted in one or more positions with a substituent selected from the group consisting of C_1 - C_{10} alkyl, amino, halo, C_1 - C_{10} haloalkyl, nitro, hydroxyl, acetoamido, C_1 - C_{10} alkoxy, and sulfonic acid or a salt thereof; or R_4 is benzodioxanemethyl, fururyl, L-propylalanyl- aminobenzyl, β -alanyl-amino- benzyl, T-BOC- β -alanylaminobenzyl, phenylamino, carbamoyl, phenoxy or C_1 - C_{10} cycloalkyl; or R_5 is a group of the following formula:

20

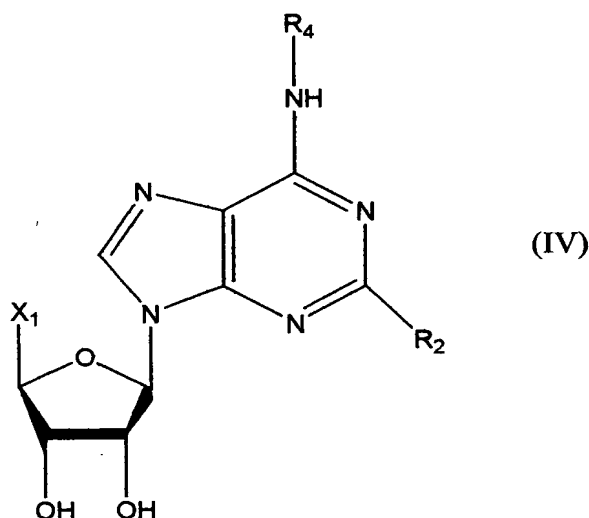


- or a suitable salt of the compound defined above, e.g. a triethylammonium salt thereof; or

when R_4 is, a group selected from alkyl, substituted alkyl, or aryl-NH-C(Z)-, then, R_4 is selected from the group consisting of substituted or unsubstituted heteroaryl-NR^a-C(Z)-, heteroaryl-C(Z)-, alkaryl-NR^a-C(Z)-, alkaryl-C(Z)-, aryl-NR-C(Z)- and aryl-C(Z)-;

wherein Z having the above defined meanings.

54. A method according to Claim 53, wherein said active ingredient is a nucleoside derivative of the general formula (IV):



in which X_1 , R_2 and R_4 are as defined in Claim 53.

55. A method according to Claim 54, wherein said active ingredient is an N6-benzyladenosine-5'-uronamide.

56. A method according to Claim 55, wherein said active ingredient is selected from the group consisting of N⁶-2-(4-aminophenyl)ethyladenosine (APNEA), N⁶-(4-amino-3-iodobenzyl) adenosine-5'-(N-methyluronamide) (AB-MECA) and 1-deoxy-1-{6- [(3-iodophenyl) methyl]amino}-9H-purine-9-yl}-N-methyl-β-D-

ribofuranuron-amide (IB-MECA) and 2-chloro-N⁶-(2-iodobenzyl)-adenosine- 5'-N-methly-uronamide (Cl-IB-MECA).